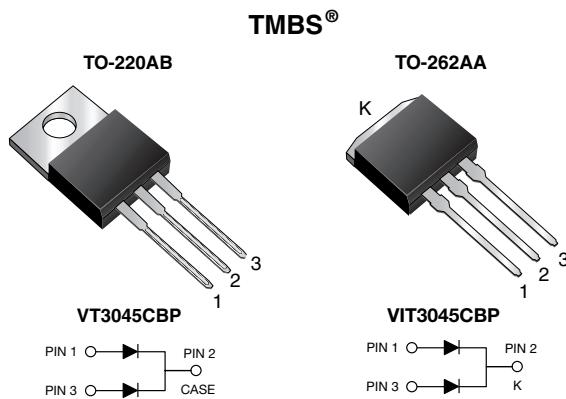


Trench MOS Barrier Schottky Rectifier for PV Solar Cell Bypass Protection

Ultra Low V_F = 0.30 V at I_F = 5.0 A



FEATURES

- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency operation
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- T_J 200 °C max. in solar bypass mode application
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



TYPICAL APPLICATIONS

For use in solar cell junction box as a bypass diode for protection, using DC forward current without reverse bias.

MECHANICAL DATA

Case: TO-220AB, TO-262AA

Molding compound meets UL 94 V-0 flammability rating
Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

M3 suffix meets JESD 201 class 1A whisker test

Polarity: As marked

Mounting Torque: 10 in-lbs maximum

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2 x 15 A
V_{RRM}	45 V
I_{FSM}	200 A
V_F at I_F = 15 A	0.39 V
T_{OP} max. (AC mode)	150 °C
T_J max. (DC forward current)	200 °C
Package	TO-220AB, TO-262AA
Diode variation	Dual common cathode

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	VT3045CBP	VIT3045CBP	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	45		V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$ (1)	30	A	
per device		15		
per diode				
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	I_{FSM}	200		A
Operating junction and storage temperature range (AC mode)	T_{OP} , T_{STG}	-40 to +150		°C
Junction temperature in DC forward current without reverse bias, $t \leq 1$ h	T_J (2)	≤ 200		°C

Notes

(1) With heatsink

(2) Meets the requirements of IEC 61215 ed. 2 bypass diode thermal test

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	
Instantaneous forward voltage per diode	$I_F = 5 \text{ A}$	$T_A = 25^\circ\text{C}$	V_F ⁽¹⁾	0.42	-	
	$I_F = 7.5 \text{ A}$			0.44	-	
	$I_F = 15 \text{ A}$			0.49	0.57	
	$I_F = 5 \text{ A}$	$T_A = 125^\circ\text{C}$		0.30	-	
	$I_F = 7.5 \text{ A}$			0.33	-	
	$I_F = 15 \text{ A}$			0.39	0.48	
Reverse current per diode	$V_R = 45 \text{ V}$	$T_A = 25^\circ\text{C}$	I_R ⁽²⁾	-	2000 μA	
		$T_A = 125^\circ\text{C}$		17	50 mA	

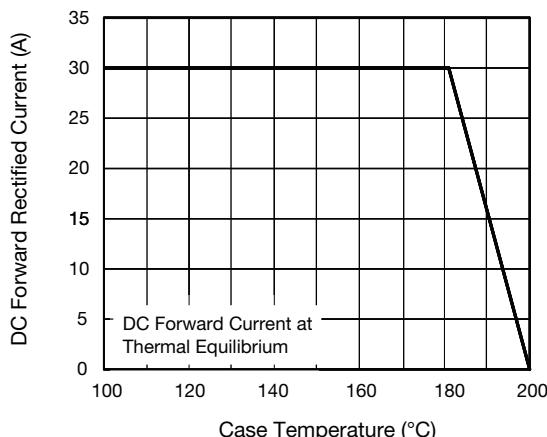
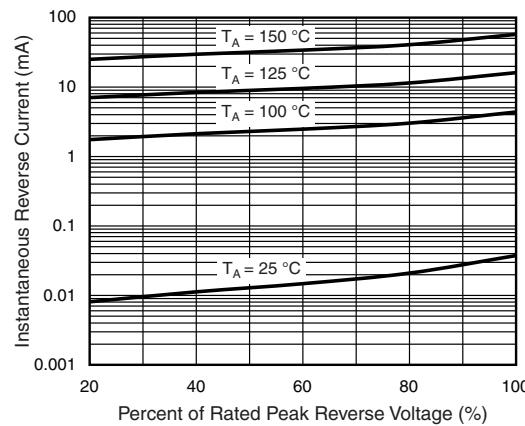
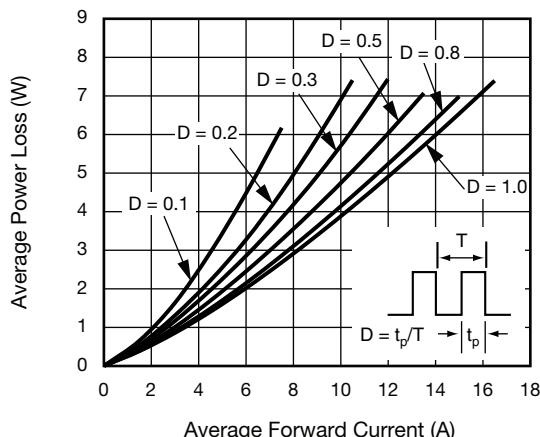
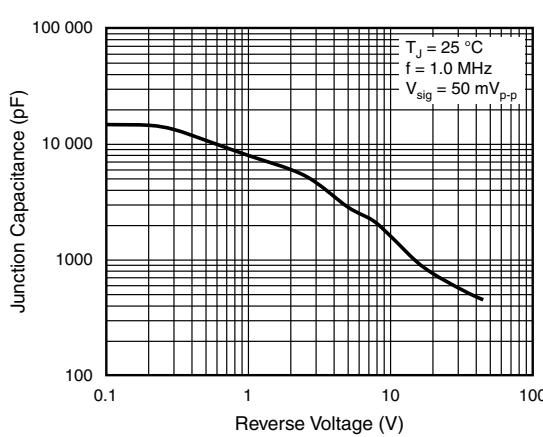
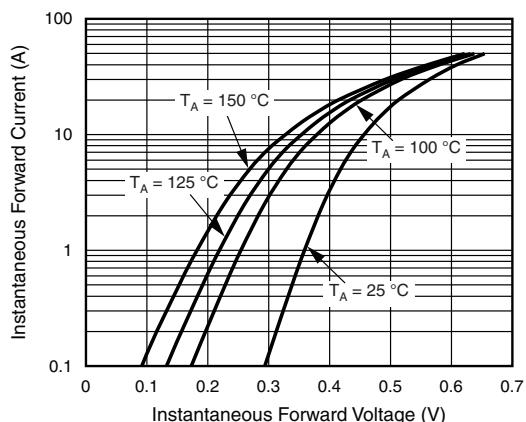
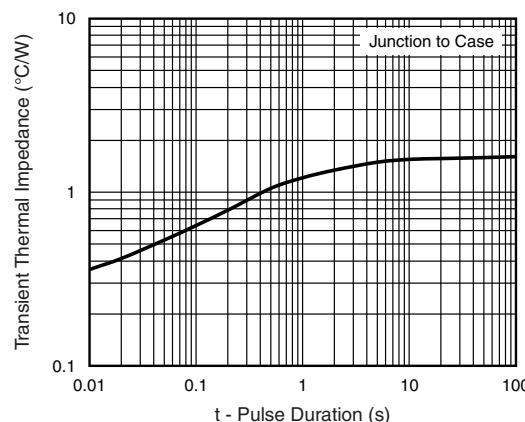
Notes

(1) Pulse test: 300 μs pulse width, 1 % duty cycle

(2) Pulse test: Pulse width $\leq 40 \text{ ms}$

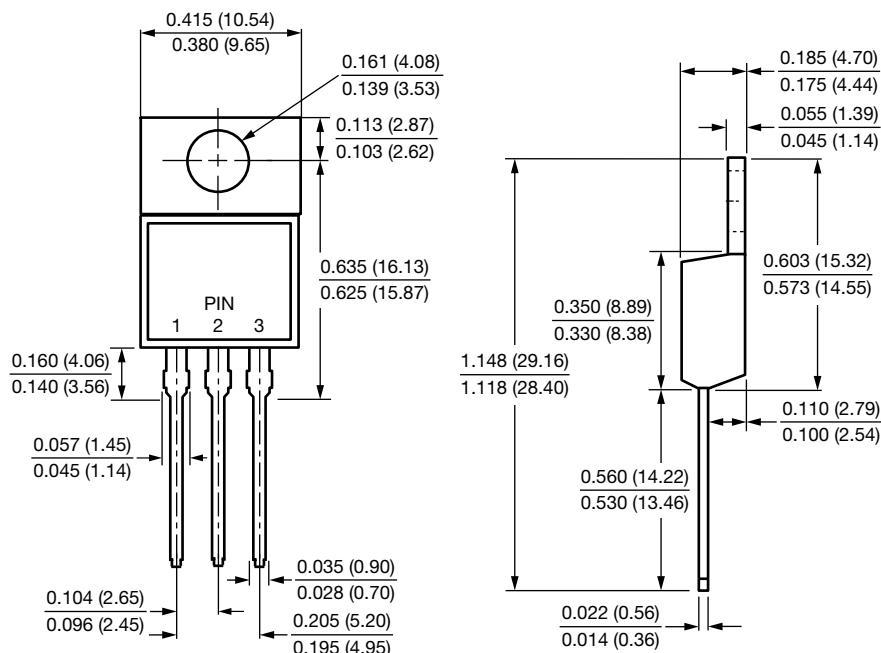
THERMAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	VT3045CBP	VIT3045CBP	UNIT	
Typical thermal resistance	per diode	$R_{\theta JC}$	1.6	$^\circ\text{C/W}$	
	per device		0.85		

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	VT3045CBP-M3/4W	1.89	4W	50/tube	Tube
TO-262AA	VIT3045CBP-M3/4W	1.45	4W	50/tube	Tube

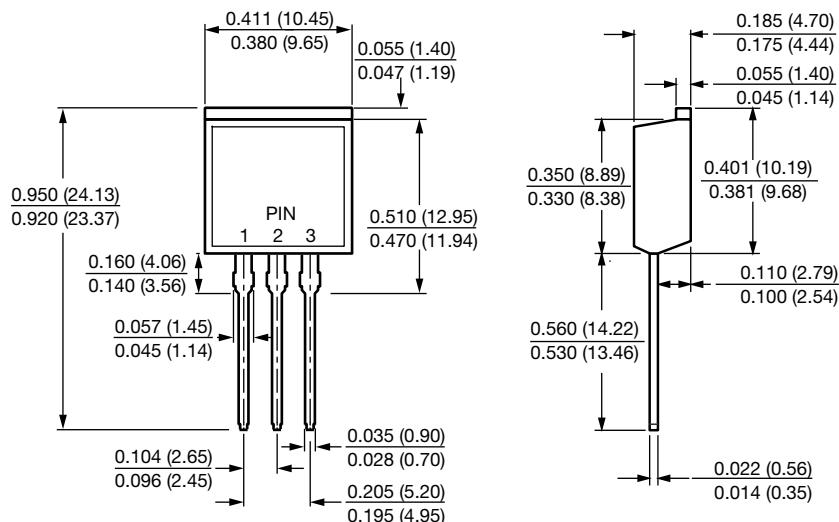
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig. 1 - Maximum Forward Current Derating Curve

Fig. 4 - Typical Reverse Characteristics Per Diode

Fig. 2 - Forward Power Loss Characteristics Per Diode

Fig. 5 - Typical Junction Capacitance Per Diode

Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

Fig. 6 - Typical Transient Thermal Impedance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB



TO-262AA



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